



IN THE
UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s): Ullas GARGI et al

Confirmation No.: 2970

Application No.: 09/904,627

Examiner: Jin Cheng Wang

Filing Date: July 16, 2001

Group Art Unit: 2672

Title: Hierarchical Image Feature-
Based Visualization

Commissioner for Patents
PO Box 1450
Alexandria, VA 22313-1450

RECEIVED
APR 30 2004
Technology Center 2600

TRANSMITTAL LETTER FOR RESPONSE/AMENDMENT

Sir:

Transmitted herewith is/are the following in the above-identified application:

- (X) Response/Amendment () Petition to extend time to respond
() New fee as calculated below () Supplemental Declaration
() No additional fee (Address envelope to "Mail Stop Non-Fee Amendment")
() Other: _____ (fee \$ _____)

CLAIMS AS AMENDED BY OTHER THAN A SMALL ENTITY						
(1) FOR	(2) CLAIMS REMAINING AFTER AMENDMENT	(3) NUMBER EXTRA	(4) HIGHEST NUMBER PREVIOUSLY PAID FOR	(5) PRESENT EXTRA	(6) RATE	(7) ADDITIONAL FEES
TOTAL CLAIMS		MINUS		= 0	X \$18	\$ 0
INDEP. CLAIMS		MINUS		= 0	X \$86	\$ 0
[] FIRST PRESENTATION OF A MULTIPLE DEPENDENT CLAIM					+ \$290	\$ 0
EXTENSION FEE	1ST MONTH \$110.00	2ND MONTH \$420.00	3RD MONTH \$950.00	4TH MONTH \$1480.00		\$ 0
OTHER FEES						\$
TOTAL ADDITIONAL FEE FOR THIS AMENDMENT						\$ 0

Charge \$ 0 to Deposit Account 08-2025. At any time during the pendency of this application, please charge any fees required or credit any overpayment to Deposit Account 08-2025 pursuant to 37 CFR 1.25. Additionally please charge any fees to Deposit Account 08-2025 under 37 CFR 1.16 through 1.21 inclusive, and any other sections in Title 37 of the Code of Federal Regulations that may regulate fees. A duplicate copy of this sheet is enclosed.

Date: April 28, 2004

Respectfully submitted,

Ullas GARGI et al

By Patrick C. Keane

Patrick C. Keane

Attorney/Agent for Applicant(s)
Reg. No. 32,858

Date: April 28, 2003

I hereby certify that this document is being filed by personal delivery to the Customer Service Window, Crystal Plaza 2, 2011 South Clark Place, Arlington, Virginia, of the United States Patent & Trademark Office on the date indicated above.

By [Signature] Reg No 32,858
Attorney Signature and Reg. No.



2672
7
Attorney's Docket No. 10006286-1
Application No. 19/904,627
Page 1

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of)	
Ullas Gargi et al.)	Group Art Unit: 2672
Application No.: 09/904,627)	Examiner: JIN CHENG WANG
Filed: July 16, 2001)	Confirmation No.: 2970
For: HIERARCHICAL IMAGE FEATURE-)	
BASED VISUALIZATION)	

RECEIVED

APR 30 2004

Technology Center 2600

REQUEST FOR RECONSIDERATION

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In response to the Office Action mailed January 28, 2004, reconsideration and allowance of the present application are respectfully requested.

Claims 1-20 remain pending in the application.

On page 2 of the Office Action, claims 1-7, 11-12 and 16-19 are rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,240,423 (Hirata et al). The Examiner asserts in numbered paragraph 3 with respect to claim 1:

Hirata teaches a method of visualizing and retrieving a data file comprising:

Displaying a plurality of images representing corresponding data files on a display device using a first distance metric (images being retrieved in order based upon the distance between the query image

and the result candidate images, column 6) *between each data file* (e.g., figures 1-11; column 6-9);

Redisplaying a portion of the images on the display device using a refined distance metric (e.g., figures. 9, 11 and 12; column 6-9); and

Performing at least one of retrieving, marking and selecting at least one desired data file (Hirata teaches retrieving at least one desired data file; see, figures 1-11; column 6-9).

Later, on pages 5-6 of the Office Action, in numbered paragraph 4, the Examiner rejects independent claim 17 based on the Hirata patent. In this portion of the Office Action, the Examiner asserts that the Hirata patent discloses clustering image data files using a distance metric in Figures 1-11 and at column 6-9. The Examiner also asserts that the Hirata patent discloses:

Interactively selecting, by a user, a portion of the images (e.g., a user specify [ies] the regions of the images; e.g., the region division of figure 3; figures 1-11; column 6-9);

Redisplaying the portion of the images in real time on the display device using a redefined distance metric (e.g., re-order based on the similarity among the candidate images of figure 9 or 2nd stage image matching based on boundary of figure 11 and grouping and re-ordering based on the similarity among candidates using distance metric of figure 11; figures 1-11; column 4); and

Retrieving a desired data file (retrieved data file is displayed on a display device; figures 1-11; column 4).

On pages 7-9 of the Office Action, claims 8 and 13-14 are rejected as being unpatentable over the Hirata patent in further view of U.S. Patent No. 6,584,221 (Moghaddam). On pages 9-10 of the Office Action, claims 9-10 and 20 are rejected as being unpatentable over the Hirata patent in view of U.S. Patent No. 6,121,969

(Jain). On pages 10-11 of the Office Action, claim 15 is rejected as being unpatentable over the Hirata patent in view of U.S. Patent No. 5,528,259 (Bates).

The foregoing rejections are respectfully traversed, as the Hirata patent, considered alone, or in combination with the various secondary references relied upon by the Examiner, fails to teach or suggest all features set forth in Applicants' independent claims 1 and 17.

The present application discloses a multi-media database and classification system, which can, for example, provide for automatic classification and retrieval of multimedia files based on features of the multimedia files. Figure 1 shows an exemplary method for visualizing and retrieving data files in accordance with an exemplary embodiment of the present invention. In step 110, a plurality of images representing data files on a display device are displayed using a first (i.e., coarse) distance metric. The distance metric represents a distance **between each data file**. In step 120, a portion of the images can be redisplayed on the display device using a refined distance metric. As described on specification page 6 beginning with line 4, the distance metric can be refined at each of plural redispays until a desired data file is found or a maximum refined distance metric is reached. In step 140, a desired data file can be retrieved, and/or can be marked or selected.

Figures 2A-2E show a graphical representation of displays generated in accordance with exemplary embodiments, where each portion of the images redisplayed can be graphically selected by a user. Figure 2A is a screen capture of an exemplary display showing a first level of images representing data files on a two-dimensional display. A first, coarse, distance metric can be calculated, and allows the user to receive useful information about the organization of images on the display. Based on perceived properties of a desired image, a user can select an area 202 of the screen where a desired image most likely resides. Figure 2B shows a portion of images redisplayed as selected by area 202. Here the distance metric has been recalculated using more of the image information than was used in the first distance calculation. As described on specification page 9, the reclustering and redisplaying of selected images is **more** than merely a zoom function.

The redisplayed process can be repeated, as represented by Figures 2C and 2D. Distance metrics between images are again recalculated using more image feature data than previously used with respect to Figure 2B. Following the redisplay based on recalculated distance metrics, a desired data file (e.g., image 240) is identifiable and can be selected and retrieved as shown in Figure 2E. Figure 3 shows another exemplary method which can be implemented in accordance with the present invention, and Figure 4 shows a flowchart for performing a coarse to fine distance calculation.

The foregoing features are broadly encompassed by independent claims 1 and 17. Exemplary embodiments of the present invention display images using a first distance metric **between each data file**, and provide for redisplaying a portion of the images using a refined distance metric in a manner which constitutes more than merely a zoom feature. Claim 1 is directed to a method of visualizing and retrieving a

data file from a second data file. The claim 1 method includes a step of displaying a plurality of images representing corresponding data files on a display device using a first distance metric **between each data file**. Claim 1 also recites redisplaying a portion of the images on the display device using a refined distance method. Claim 17 is directed to a method of interactively retrieving a data file from a set of data files in real time, and includes features similar to those mentioned with respect to claim 1.

The foregoing features are neither taught nor suggested by the Hirata patent considered individually or in combination with the various secondary documents relied upon by the Examiner.

The Hirata patent is directed to a method for querying a database of images wherein the results of the query are based upon a combination of region based image matching and boundary based image matching. In Hirata's query-based system, an initial query is submitted and a set of results is clustered. The clustering of the search results is performed using a distance between each file **and** a distance to the query, as discussed at column 6, lines 37-41. In all cases, clustering is based on the distance to a query (see Hirata's Figures 8 and 9). Figure 11 of the Hirata patent discloses a second stage of image matching; however, this second stage of image matching, like the first stage, is applied to **all** images initially obtained in response to a query.

In contrast to the method disclosed and recited in Applicants' independent claims 1 and 17, the Hirata patent fails to teach or suggest using a refined distance metric which is applied to a user selected subset of displayed images.

In addition, the Hirata patent fails to teach or suggest the claim 17 feature of interactive user selection for selecting a subset of images to be displayed. Rather,

the query based system of the Hirata patent groups all images, and only creates new groupings based on a new query. The Hirata patent does not teach or suggest applying a second stage of image matching to a user selected subset of returned images.

In rejecting claim 17 on page 6 of the Office Action, the Examiner refers to the region division in figure 3 of the Hirata patent as illustrating user specified regions. However, Hirata does not teach or suggest that a refined distance metric, as presently claimed, is used to redisplay the images of any defined region (see Hirata at column 4, line 10 to column 5, line 13). As such, the Hirata patent also fails to teach or suggest the user interactive selection feature of Applicant's claim 17.

Although Hirata uses a first stage of region based matching, and a second stage of boundary based matching, both of these image display processes operate on the initial data set acquired in response to the initial query. Hirata does not teach or suggest redisplaying a portion of the initial images using a refined distance metric.

Thus, the Hirata patent fails to teach or suggest the features recited in Applicants' independent claims 1 and 17.

The remaining documents relied upon by the Examiner; namely, the patents to Moghaddam, Jain and Bates, were discussed in Applicants' previous response, and for reasons similar to those discussed therein, fail to overcome the deficiencies of the Hirata patent. As such, independent claims 1 and 17 are considered allowable. All of the other claims depend from independent claims 1 and 17 and recite additional advantageous features which further distinguish over the documents relied upon by the Examiner.

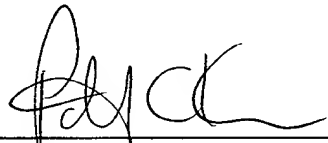
All rejections and objections raised in the Office Action having been addressed, it is respectfully submitted that the present application is in condition for allowance and a Notice of Allowance is respectfully solicited.

Respectfully submitted,

BURNS, DOANE, SWECKER & MATHIS, L.L.P.

Date: April 28, 2004

By: _____



Patrick C. Keane
Registration No. 32,858

P.O. Box 1404
Alexandria, Virginia 22313-1404
(703) 836-6620